Methods: A retrospective analysis of all tibial interventions done for CLI between 2006 and 2009 was performed. Outcomes of isolated tibial (GI) and multilevel interventions (GII) (femoropopliteal and tibial) were compared.

Results: Endovascular interventions were utilized to treat 136 limbs in 123 patients for CLI: 82 multilevel (80% tissue loss), 54 isolated tibial (85% tissue loss). Mean age and baseline comorbidities were comparable. The mean initial ankle-brachial index (ABI) was significantly lower in GII (0.53 vs. 0.74, P < .001) but was similar post-intervention (0.86 vs. 0.88, P = NS). Wound healing or improvement was achieved in 69% in GI, and in 87% in GII (P = .05). Time to healing was significantly longer in GI: 11.5 ± 8.8 months vs. 7.7 ± 6.6 months (P = .03). Limb salvage was achieved in 81% of GI and 95% of GII (P = .05). Mean overall follow up was 8.7 ± 7.3 months. The rate of reintervention was similar (13% vs. 18%, P = NS), so was the rate of late surgical conversion (0% vs. 6%, P = NS). Limb loss resulted from lack of conduit or initial target vessel for bypass and prohibitive cardiac co-morbidities. Overall mortality rates were similar among both groups (mean, 2.5%). Isolated tibial intervention were associated with limb loss at one year on multivariate analysis, and resulted in a lower rate of limb salvage at one year compared with multilevel interventions (Fig 1) despite comparable primary patency rates (Fig 2). Predictors of limb loss in patients treated with isolated tibial intervention included multiple synchronous tibial revascularization (P = .005) and coronary artery disease (CAD) requiring coronary artery bypass graft (CABG) (P = .005).

Conclusions: Adequate rates of limb salvage can be achieved in patients undergoing multilevel interventions for CLI, despite low patency rates at one year. Patients with isolated tibial disease appear to have a higher incidence of limb loss secondary to poor initial pedal runoff, more extensive disease, and severe co-morbidities precluding surgical bypass. Other therapeutic strategies should be considered in these patients including primary amputation or pedal bypass when applicable.

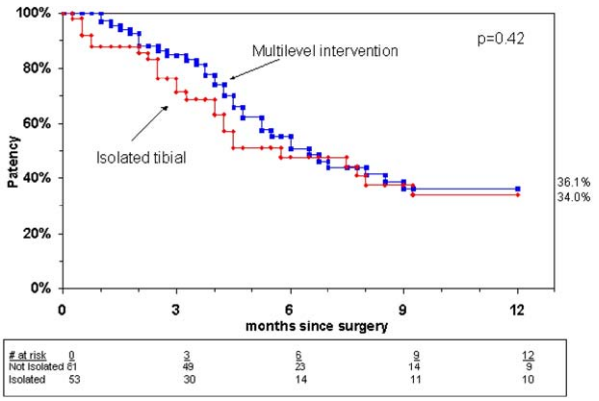

Fig 1. Cumulative primary patency (n = 134).

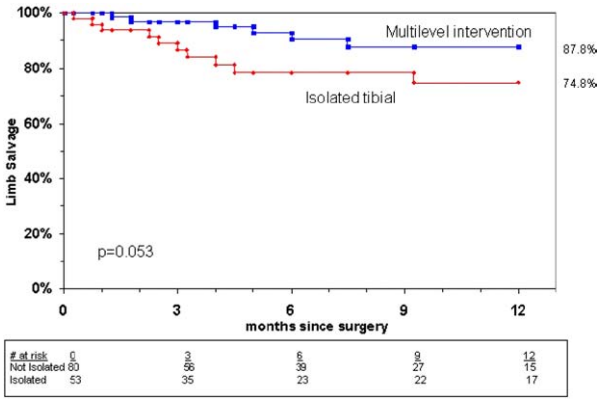

Fig 2. Cumulative limb salvage by type of intervention (n = 133)

Prevalence of Chronic Renal Insufficiency (CRI) and its Impact on Outcomes of Patients Undergoing Lower Extremity Endovascular Revascularization

Khan H, Graham AR, Menezes A, et al

Objectives: Chronic renal insufficiency (CRI) is a common co-morbidity in patients undergoing lower extremity revascularization. Traditionally its prevalence has been reported based upon actual serum creatinine (Cr) value and its presence linked to worse outcomes. We examined the prevalence of CRI based upon creatinine clearance and assessed its impact on outcomes across various groups.

Methods: An Institutional Review Board-approved prospective database of lower extremity revascularizations between 2004 and 2008 was analyzed. All patients with at least one preoperative Cr value were included for analysis. Cr clearance was calculated using the Cockcroft-Gault equation. Renal function was defined as normal, mild, moderate, and severe CRI or end stage renal disease (ESRD) if Cr clearance was >90, 60-89, 30-59, 15-29, and <15 (or documented hemodialysis), respectively. Indications for intervention were claudication and critical limb ischemia (CLI). Postoperatively, patients were followed clinically and by non-invasive vascular studies at regular intervals. Primary, primary assisted, secondary patency, and limb salvage rates were calculated using Kaplan-Meier analysis and compared between the groups.

Results: One thousand five hundred ninety-nine lesions were treated in 667 patients. Only 64 (9.6%) patients had normal (>90) Cr clearance. Demographics are compared in Table I. Female gender, diabetes, and hypertension were more common in moderate and severe CRI and ESRD. Mean follow up was 12.7 ± 12.4 months. When lesions in the normal group were compared with mild, moderate, and severe CRI groups, there was no difference in primary, primary assisted, and secondary patency in claudicants at 24 and 36 months. Patients with CLI also showed no difference in patency or limb salvage. Patients with ESRD had significantly worse patency and limb salvage when compared with non-ESRD patients (Table II).

Conclusions: In our dataset, there was a remarkably high prevalence of patients with CRI when creatinine clearance was measured. CRI did not have a negative impact on outcomes in our series except in patients with ESRD.

Table I. Demographics and characteristics

	N (%)				
Characteristics	*Normal (64)*	*Mild (172)*	*Moderate (328)*	*Severe (93)*	*ESRD (63)*
Mean age (years)	60.7 ± 8.7 (37-84)	67.5 ± 8.5 (47-87)	74.6 ± 9.5 (45-94)	78.9 ± 10.5 (48-102)	66.9 ± 11.2 (47-90)
Male	51 (79.7)	122 (70.9)	164 (50.0)	42 (45.2)	42 (66.7)
Diabetes	29 (45.3)	97 (56.4)	204 (62.2)	63 (67.7)	52 (82.5)
Hypertension	48 (75.0)	147 (85.5)	295 (89.9)	88 (94.6)	49 (77.8)

ESRD, End stage renal disease.

Table II. Patency and limb salvage rate at 24 months

	Claudicants		*Critical Limb Ischemia*		
	Primary Patency	*Secondary Patency*	*Primary Patency*	*Secondary Patency*	*Limb Salvage*
Normal	58.3±7.5	91.0±4.5	38.7±8.0	52.2±8.5	72.1±7.2
Mild	62.6±4.7	88.7±3.1	37.8±5.0	63.2±4.9	79.1±4.0
Moderate	62.6±3.9	88.8±2.3	35.0±3.2	53.3±3.4	65.5±3.3
Severe	50.4±9.7	70.4±8.9	26.9±5.9	56.6±6.4	71.1±5.8
ESRD			42.2±7.9	61.9±6.1	79.5±3.9
All others (Non ESRD)			46.1±1.8	69.3±1.7	82.8±1.4
P value ESRD vs non ESRD			0.12	0.001	0.02

ESRD, End stage renal disease.

Proportion of Critical Ischemia Patients who Require an Open Surgical Procedure in a Center Favoring Endovascular Treatment

Garguilo NJ III, Veith FJ, Lipsitz EC, Shamul J, O'Connor D, Benros RM, et al

Objectives: Endovascular interventions have gained widespread familiarity as primary and secondary treatments for critical lower extremity ischemia (CLI), and many believe there is little need for open bypasses for